

# DNR Garmin

## A User Guide for Educators

*Prepared by: The Virginia Geospatial Extension Program*

### Overview

DNR Garmin is an easy-to-use software application that allows you to manage, manipulate and save your GPS information for use in GIS programs such as ArcMap. This is a “point and click” software package. While there are a number of things that DNR Garmin software can do, some of the functions most applicable to extension agents include the following:

- Educators can use this software package to **transfer** GPS data between a Garmin GPS receiver and a PC.
- DNR Garmin can **save** GPS data as projected (or unprojected) shapefiles for use in ArcMap, as graphics, as a database files, or as text files for use in other programs.
- The program allows for initial **projection** of GPS data (i.e. waypoints, routes, etc.) to many different map datums (Lat/Long, UTM/UPS, country grids etc.).
- Information can be **filtered** in various ways and waypoints **sorted** according to specified criteria. Route and track statistics are available and can be transferred into other programs for analysis (i.e. spreadsheet programs).

DNR Garmin unfortunately does not have any mapping software that allows you to view your data before you save it to your computer. DNR Garmin is designed specifically for Garmin GPS units. This guide is written using the Garmin Legend GPS receiver. All other Garmin GPS receivers will follow the same protocols.

### Before Using DNR Garmin

The instructions in this handbook assume the following:

1. You have already installed DNR Garmin software on your computer. If you do not have it installed you can download the program at <http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html>
2. You have already collected GPS Data (i.e. waypoints, routes, tracks, etc.), and have stored the GPS data on your GPS receiver (if not, refer to *The Garmin Etrex Legend: An Introductory Handbook for Educators* for additional information and instructions. The Garmin handbook has been prepared by the Virginia Geospatial Extension Program. This customized Garmin handbook is also available online: <http://www.cnr.vt.edu/gep/tools.html>

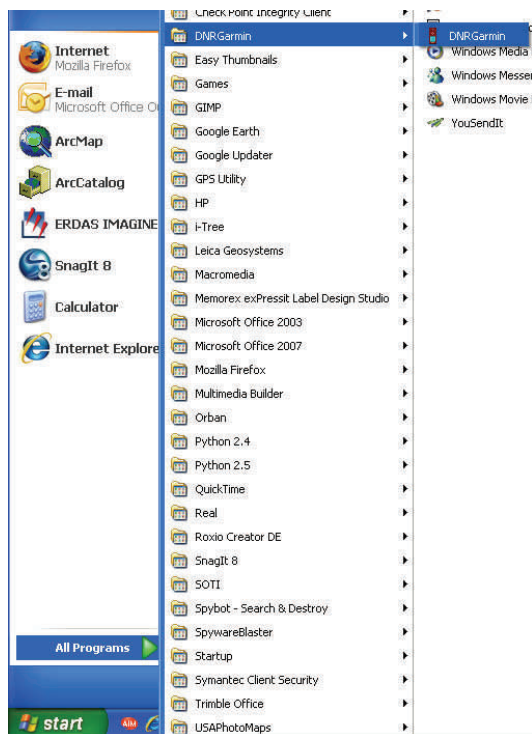


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## Let's Get Started Downloading Waypoints

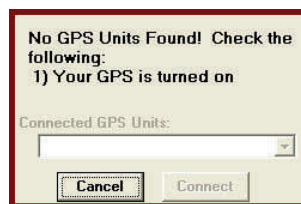
1. Start DNR Garmin by selecting it from the Pro-



gram list on your computer.

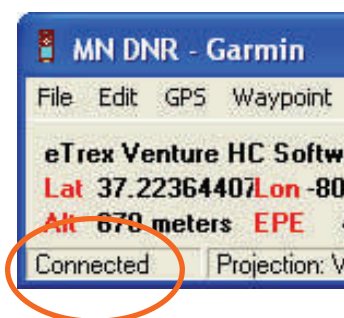
2. Connect your GPS receiver to the computer using the data cable provided with your GPS receiver. Make sure that your GPS receiver is turned on.
3. DNR Garmin is configured to work with all Garmin GPS units and is defaulted on first use to search for a USB connection to your GPS unit. If your Garmin is connected with a USB cable, DNR Garmin will connect automatically with your unit.

\*If a serial port connection is being used, DNR Garmin will prompt you to retry to find a USB connection. Cancel this prompt.



For serial port connection, go to <GPS>, then <Set Port>, and select the port being using, most likely Port 1, and DNR Garmin will automatically connect to your unit.

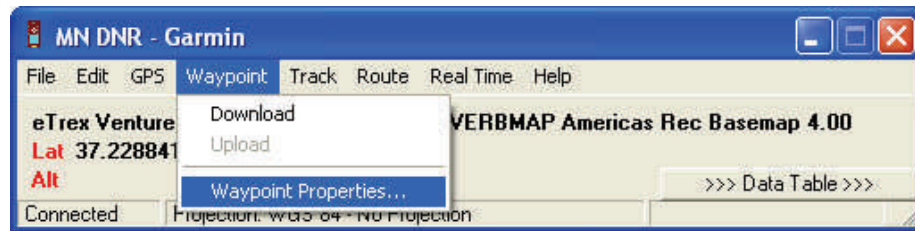
Once connected, the status bar on the bottom of DNR Garmin will tell you that your device is connected.



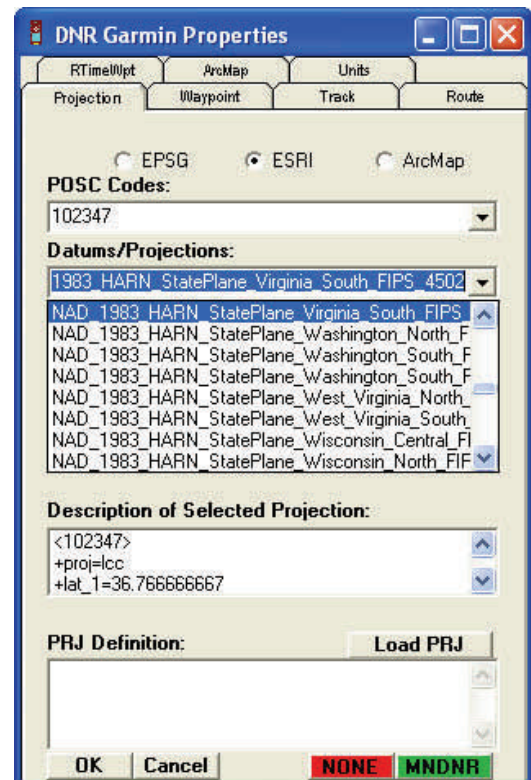
DNR Garmin will also list the type of Garmin unit you are using and the projection that your data will be projected into once downloaded. Step 4 tells you how to change this projection to one of your choice.

Your GPS should now be properly communicating with your PC through the DNR Garmin Software...

4. Now that your GPS unit is connected, you can set up the datum/projection that you would like your data projected to when it is uploaded to DNR Garmin. To do this, go to <File> , then <Set Projection>. This brings you to the Garmin Properties dialog box (This can also be accessed by going through <Waypoint>, <Track> or <Route> and the “Properties” option, then the “Projection” tab.).

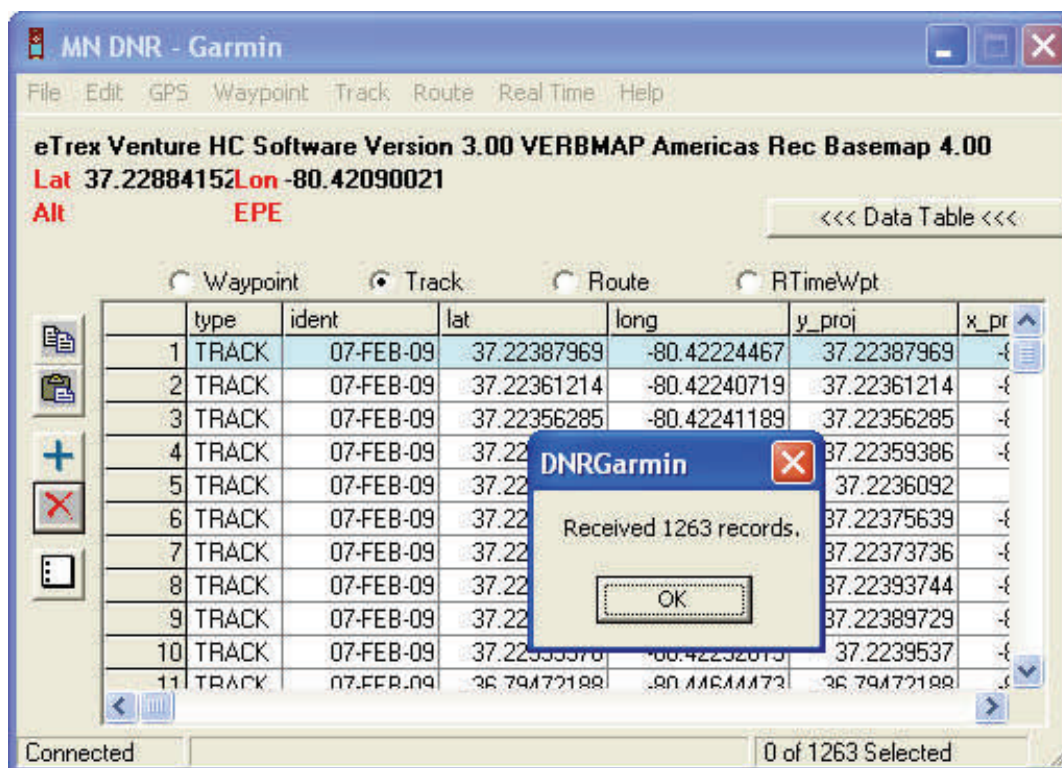


The Properties dialog box will appear with several tabs. Select the “Projection” tab. Here you are allowed to choose from a wide range of datum/projections< from the pull-down menu under “Datums/Projections,” that your GPS data will be projected to once downloaded to DNR Garmin. Once a projection is selected, click “OK.”



You are now ready to download and save your GPS data!

5. Unfortunately, DNR Garmin does not allow you to download more than one type of data at the same time. You must download waypoints, trackpoints, and routes individually. However, the same method is used. Depending on which type of data you have, you go to the corresponding menu (<Waypoint>, <Track>, or <Route>) and then <Download>. DNR Garmin will automatically download the selected type of data and will display the data as shown below.



Review of terms:

- Waypoints:** These are “virtual points” or marks that you have saved in individually. Waypoints can be assigned customized names (the GPS receiver assigns them numerical names [001, 002] by default).
- Tracks:** Tracks are a previous path of travel. Basically, you turn on your GPS receiver, and it will start to “map your movements”. Trackpoints are individual points that are used to create a track (if you connect these points, with a line, you would have a track)
- Routes:** A route is a “path to a destination with intermediate stops along the way”. The “stops” along the way are defined by Waypoints.

## Setting Up Your Data Table

One feature of DNR Garmin is that it allows you to choose what fields you would like to have in your data table once it has been saved. To do this, access DNR Garmin's Property dialog box through any of the methods mentioned in Step 4. Go to the tab that is related to the type of data you are working with (e.g. tracks). Under "Fields to Use" is your list of fields for your data. You can uncheck/check any combination of fields that you want, or just choose to leave all fields checked. The checked fields will be the fields in your attribute table and database once you have saved the data.

Note: Some fields, such as x and y coordinate fields are required by DNR Garmin and cannot be unchecked...you will be prompted with a message telling you if it is required though.

**DNR Garmin Properties**

RTIME/Wpt   ArcMap   Units

Projection   Waypoint   **Track**   Route

**Fields to Use:**

	Name	Alias	Type	Length	Precision
<input checked="" type="checkbox"/>	type	type	C	10	
<input checked="" type="checkbox"/>	ident	ident	C	24	
<input checked="" type="checkbox"/>	lat	lat	N	18	
<input checked="" type="checkbox"/>	long	long	N	18	
<input checked="" type="checkbox"/>	y_proj	y_proj	N	18	
<input checked="" type="checkbox"/>	x_proj	x_proj	N	18	
<input checked="" type="checkbox"/>	new_seg	new_seg	C	10	
<input checked="" type="checkbox"/>	display	display	C	10	
<input checked="" type="checkbox"/>	color	color	C	10	
<input checked="" type="checkbox"/>	altitude	altitude	N	12	
<input checked="" type="checkbox"/>	depth	depth	N	12	
<input checked="" type="checkbox"/>	temp	temp	N	12	
<input checked="" type="checkbox"/>	time	time	C	20	
<input checked="" type="checkbox"/>	model	model	C	20	
<input checked="" type="checkbox"/>	filename	filename	C	254	
<input checked="" type="checkbox"/>	ltime	ltime	C	20	

<   >

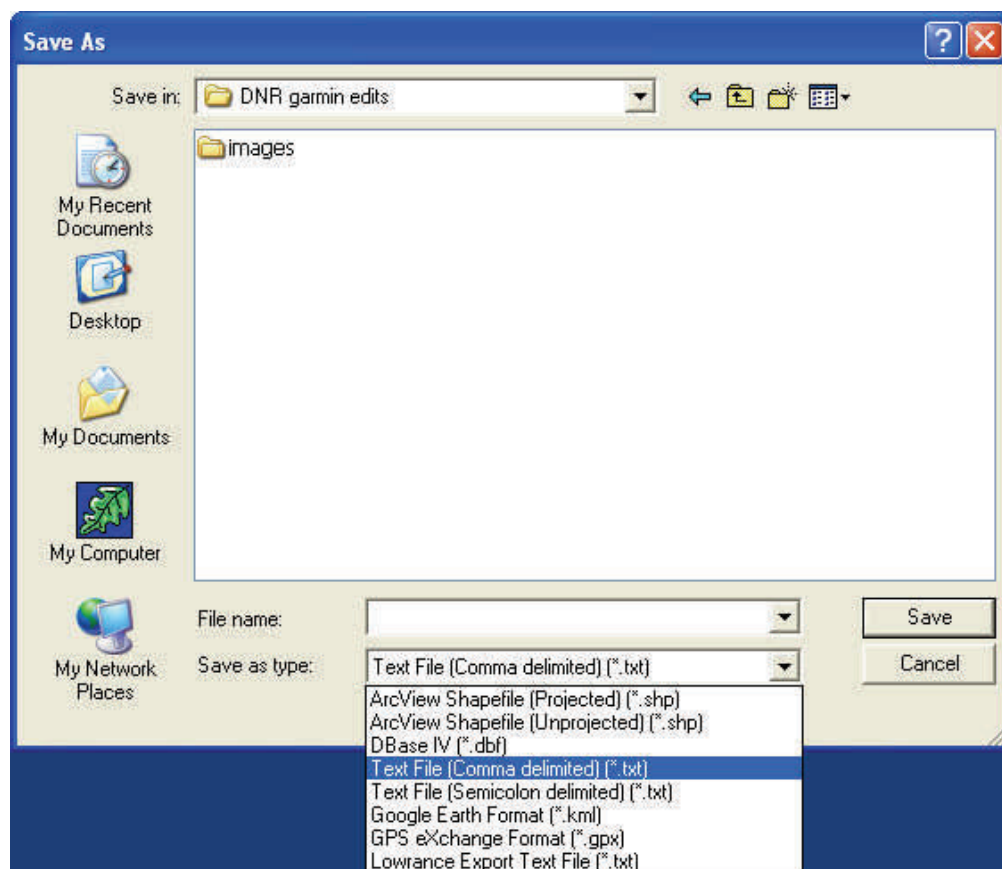
**OK   Cancel   Reset**



## Saving Your data to a PC

You can save the data that you have collected on your GPS receiver directly to a “GIS readable” file (i.e. shapefile).

1. Make sure the file that you want to save (i.e. Waypoints, Tracks, etc.) is “visible”.
2. Under the <File> menu, select <Save To>, and <File>.
3. To save in a GIS compatible format,
  - a. Enter a <Filename>
  - b. Under the <Save As Type>, option, choose either:
    - ◆ ArcView Shapefile (Projected)(\*.shp)- this option saves data directly to a GIS-compatible shapefile according to the user-defined projection
    - ◆ ArcView Shapefile (Unprojected)(\*.shp)- this option saves data directly to a GIS-compatible shapefile as well, but according to the unprojected coordinates directly from the GPS unit.
    - ◆ GPS eXchange Format (\*.gpx)- this option allows you to exchange data (waypoints, tracks, or routes) with other GPS users
    - ◆ Google Earth Format (\*.kml)- this option allows you to display your data on Google Earth with a click of a button.



And Presto!. You have created a GIS compatible file from your GPS data!